## REMARKS[1]

In the Office Action ("Office Action"), the Examiner objected to claims 1, 3, and 30 because of informalities; rejected claims 1, 3-7, 9-14, and 30 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,714,885 to Lulham ("*Lulham*") in view of U.S. Patent No. 5,574,376 to Topp et al. ("*Topp*"); rejected claim 2 under 35 U.S.C. § 103(a) as being unpatentable over *Lulham* and *Topp* as applied to claim 1 and in further view of U.S. Patent No. 5,539,323 to Davis, Jr. ("*Davis*"); and rejected claim 8 under 35 U.S.C. § 103(a) as being unpatentable over *Lulham* and *Topp* as applied to claim 1 and in further view of U.S. Patent Publication No. 2003/0010494 to Bose et al. ("*Bose*").

With this response, Applicant amends claims 1-3, 14, and 30. Claims 1-30 remain pending in the above-identified application, of which claims 15-29 have been withdrawn from consideration. Applicant respectfully traverses the rejections and requests reconsideration based on the following remarks.

### I. Claim Objections

The Examiner objected to claims 1 and 30 because of informalities, stating that "the amended part of the claims stating 'amplifying signals from the first antenna coil and the second antenna coil …', there is no antecedent basis for 'the first and second antenna coils' and 'the' should be replaced with 'a'." Office Action, page 2. Further, the Examiner objected to claim 3, stating that "because antenna coils are introduced in claim 1, 'a first and second antenna coil' should be replaced with 'the first and second antenna coil'." Office Action, page 2 (emphasis in original). In response, Applicant has amended claims 1, 3, and 30 to address the Examiner's

[1] The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement of characterization in the Office Action.

concerns. Accordingly, Applicant respectfully requests that the Examiner withdraw the objection of claims 1, 3, and 30.

## II. Claim rejections under 35 U.S.C. § 103(a)

The key to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reasons why the claimed invention would have been obvious. Such an analysis should be made explicit and cannot be premised upon mere conclusory statements. MPEP § 2142, 8th Ed., Rev. 6 (Sept. 2007). "A conclusion of obviousness requires that the reference(s) relied upon be enabling in that it put the public in possession of the claimed invention." MPEP § 2145. Furthermore, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art" at the time the invention was made. MPEP § 2143.01(III), internal citation omitted. Moreover, "[i]n determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious." MPEP § 2141.02(I), internal citations omitted (emphasis in original).

"[T]he framework for the objective analysis for determining obviousness under 35 U.S.C. § 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). . . . The factual inquiries . . . [include determining the scope and content of the prior art and] . . . [a]scertaining the differences between the claimed invention and the prior art." MPEP § 2141(II). "Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art." MPEP § 2141(III). In this application, a *prima facie* case of obviousness has not been established because the Office Action has neither properly determined the scope and content of the prior art nor properly

ascertained the differences between the claimed invention and the prior art. Accordingly, the Office Action has failed to clearly articulate a reason why the prior art would have rendered the claimed invention obvious to one of ordinary skill in the art.

A. Claims 1, 3-7, 9-14, and 30

The Examiner has rejected claims 1, 3-7, 9-14, and 30 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,714,885 to Lulham ("*Lulham*") in view of U.S. Patent No. 5,574,376 to Topp ("*Topp*"). However, neither *Lulham* nor *Topp* teach "entering the test values at a plurality of test points on the cable route to a test value memory," as recited in claims 1, 3, 4, and 30. The Examiner states that *Lulham* fails to disclose or suggest "entering the values of a plurality of test points along the cable and storing all values recorded in memory," as recited in claims 1, 3, 4, and 30. Office Action, pages 3-4. Therefore, as indicated by the Examiner, *Lulham* at least does not teach "entering the test values at a plurality of test points on the cable route to a test value memory," as recited in claims 1, 3, 4, and 30. *Topp* does not cure the defects in the teaching of *Lulham*. The Examiner, however, asserts that *Topp* discloses "entering the values of a plurality of test points along the cable (col 4 line 38-44; see figure 2c) and storing all values recorded in memory (col 3 line 62-64)." Office Action, page 4.

*Topp* generally discloses an "a.c. field measurement system for detecting and sizing defects in a conductor," more specifically, for detecting and sizing "surface breaking cracks on ferritic steel structures." (*Topp*, col. 1, lines 6-9). The a.c. measurement system includes a probe for inducing a uniform a.c. field perpendicular to the expected crack edge, a sensor comprised of two orthogonally oriented coils, and a processor. (*Topp*, col. 1, lines 37-60). In operation, a ferromagnetic yoke, included in the probe head, induces a uniform current in the test piece. (*Topp*, col. 2, lines 15-24). In order to accommodate "a range of curvatures in the test pieces"

the probe uses "two stainless steel legs, 6," which protrude from the base of the probe. (*Topp*, col. 3, lines 23-25). The probe head performs "simultaneous measurements of at least two mutually perpendicular components of magnetic field" as the probe head traverses in a direction perpendicular to the expected crack edge. (*Topp*, col. 1, lines 55-60). As shown in FIG. 3, a graphical display of these measurements "along a simple surface-breaking crack" includes three traces indicating the start, midpoint, and the end of the crack. (*Topp*, col. 4, lines 4-17). *Topp*, however fails to disclose "entering the test values at a plurality of test points on the cable route to a test value memory," as recited in amended claims 1 and 3, claim 4, and amended claim 30.

It appears that the Examiner has characterized "thread roots" of *Topp* as corresponding to Applicant's claimed "cable." *Topp* discloses that an alternate probe head for inspecting thread roots has "a thread form on one face to mate with the thread to be inspected." (*Topp*, col. 4, lines 35-38) (emphasis added). "Each crown of this thread contains a pair of sense coils 21." (*Topp*, col. 4, lines 38-39). A "root", as provided in the *Machinery's Handbook Twenty-Third Edition, First Printing, 1988, page 1478*, is "that surface of the thread which joins the flanks of adjacent thread forms and is immediately adjacent to the cylinder or cone from which the thread projects." Therefore, the Examiner has mischaracterized the term "thread roots", as disclosed by *Topp*. *Topp* thus also fails to teach or suggest "entering the test values at a plurality of test points on the cable route to a test value memory," as recited in amended claims 1 and 3, claim 4, and amended claim 30. The burden is on the Examiner to show why the features disclosed in the applied references disclose or render obvious Applicant's claims, and the Examiner has not met this burden. Moreover, for the reasons presented above, the Examiner has not properly determined the scope and content of *Topp*.

As explained above, the elements required by amended claims 1 and 3, claim 4, and amended claim 30 are neither taught nor suggested by the applied references. Nor has the Examiner explained how teachings of the references could be modified to achieve the claimed combination. Consequently, the Office Action has neither properly determined the scope and content of the prior art nor properly ascertained the differences between the prior art and the claimed invention. Accordingly, no reason has been clearly articulated as to why the claims would have been obvious to one of ordinary skill in the art in view of the prior art. Therefore, a *prima facie* case of obviousness has not been established for amended claims 1 and 3, claim 4, and amended claim 30.

For at least the above reasons, amended claims 1 and 3, claim 4, and amended claim 30 are allowable. Moreover, claims 5-7 and 9-14 are allowable at least due to their dependence from one of amended claims 1 and 4. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 1, 3-7, 9-14, and 30 under 35 U.S.C. § 103(a).

B. Claim 2

Amended claim 2 depends from amended claim 1 and thus requires all of the elements respectively recited in amended claim 1. As discussed with respect to amended claim 1, neither *Lulham* nor *Topp*, viewed either separately or in combination, teach or suggest "entering the test values at a plurality of test points on the cable route to a test value memory," as recited in amended claim 1, and required by amended claim 2. Nor is such a combination obvious in view of *Topp*.

The Examiner cites to *Davis* for allegedly disclosing "wherein a cable has a central connector connected to an earth ground (col 2 line 62-65)." Office Action, page 6. Such alleged teachings, even if combinable with *Lulham* in view of *Topp*, fails to cure the deficiencies of

*Lulham* and *Topp*. That is, *Davis* also fails to provide any disclosure of "entering the test values at a plurality of test points on the cable route to a test value memory," as recited in claims 1, 3, 4, and 30, and required by amended claim 2. Moreover, *Davis* also fails to provide any disclosure which renders the claimed combination obvious over *Lulham* and *Topp* in view of *Davis*.

Furthermore, *Davis* fails to teach or suggest "wherein coupling the audio frequency generator to the cable includes: connecting a first pole of the audio frequency generator to a first end of a central conductor of the cable, wherein the first pole is coupled to receive a signal output from the audio frequency generator; connecting a second pole of the audio frequency generator to an earth ground; and connecting a second end of the central conductor to the earth ground," as recited in amended claim 2. The Examiner states that *Davis* teaches "wherein a cables has a central connector to an earth ground (col 2 line 62-65)." Office action, page 6.

*Davis* discloses "a device for detecting the presence of an article at a specified location by measuring a change in change capacitance which is caused by the placement of the article at the specified location." (*Davis*, col. 1, lines 42-45). The change in capacitance is measured using a circuit comprising an oscillator having an output frequency that changes based on the change in the capacitance measured at a sensor. (*Davis*, col. 1, lines 45-49). The circuit includes "an oscillator," "a voltage follower," "a triaxial cable," and "a frequency-to-voltage converter." (*Davis*, col. 2, lines 10-15). The sensor "includes a ground plate 1, a sensing plate 2 and a shield plate 3." (*Davis*, col. 2, lines 17-18). As shown in FIG.1 and FIG. 2, placing an article on the support plate increases the input capacitance (i.e. the capacitance between the sensing plate 2 and the shield plate 3). (*Davis*, col. 2, lines 32-33). As shown in FIG. 3, the combination of the input capacitance formed by the sensing plate 2 and the shield plate 3 coupled to the input of inverter circuit 12 and the resistive feedback 13 forms an oscillator having frequency that is a

function of the input capacitance. (*Davis*, col. 3, lines 1-3). In other words, *Davis* discloses that the input of an oscillator circuit is coupled to a center conductor of a triaxial cable to receive a capacitance measured at a sensor. Accordingly, *Davis* fails to teach or suggest "wherein coupling the audio frequency generator to the cable includes: connecting a first pole of the audio frequency generator to a first end of a central conductor of the cable, wherein the first pole is coupled to receive a signal output from the audio frequency generator; connecting a second pole of the audio frequency generator to an earth ground; and connecting a second end of the central conductor to the earth ground," as recited in amended claim 2 (emphasis added). Moreover, *Davis* also fails to provide any disclosure which renders the claimed combination obvious over *Lulham* and *Topp*.

As explained above, the elements required by amended claim 2 are neither taught nor suggested by the applied references. Nor has the Examiner explained how teachings of the references could be modified to achieve the claimed combination. Consequently, the Office Action has neither properly determined the scope and content of the prior art nor properly ascertained the differences between the prior art and the claimed invention. Accordingly, no reason has been clearly articulated as to why the claim would have been obvious to one of ordinary skill in the art in view of the prior art. Therefore, a *prima facie* case of obviousness has not been established for amended claim 2.

For at least the above reasons, amended claim 2 is allowable. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 2 under 35 U.S.C. § 103(a).

C. Claim 8

Claim 8 depends from amended claim 1 and thus requires all of the elements respectively recited in amended claim 1. As discussed with respect to amended claim 1, neither *Lulham* nor *Topp*, viewed either separately or in combination, teach or suggest "entering the test values at a plurality of test points on the cable route to a test value memory," as recited in amended claim 1, and required by claim 8. Nor is such a combination obvious in view of *Topp*.

The Examiner cites to *Bose* for allegedly disclosing "wherein a variation of the component of the orthogonal values are determined, and the variation is scaled to form the degree of inhomogeneity (paragraph 9, see figures 9-14)." Office Action, page 7. Such alleged teachings, even if combinable with *Lulham* in view of *Topp*, fails to cure the deficiencies of *Lulham* and *Topp*. That is, *Bose* also fails to provide any disclosure of "entering the test values at a plurality of test points on the cable route to a test value memory," as recited in claims 1, 3, 4, and 30, and required by claim 8. Moreover, *Davis* also fails to provide any disclosure which renders the claimed combination obvious over *Lulham* and *Topp* in view of *Bose*.

Furthermore, *Bose* fails to teach or suggest "wherein determining a degree of inhomogeneity along the cable route from the test values in the test value memory includes: retrieving test values corresponding to various test points along the cable route that are stored in memory; determining the variation in the two orthogonal components of the magnetic field from the test values; and scaling the variation to form the degree of inhomogeneity," as recited in claim 8 (emphasis added). The Examiner states that *Bose* teaches "wherein a variation of the component of the orthogonal values are determined, and the variation is scaled to form the degree of inhomogeneity (paragraph 9, see figures 9-14)." Office Action, page 7.

*Bose* discloses "a method and apparatus for determining properties of earth formations using sonic well logging." (*Bose*, [0002]). The method comprises the steps of "determining, from the signals, where said formation is inhomogeneous" and "outputting a characterization of the formation as one of the following types: isotropic/homogeneous, anisotropic/homogeneous, isotropic/inhomogeneous, and anisotropic/inhomogeneous." *Id.*, at [0009]. The signals are "sonic energy", received by a "logging device", that have traveled through the earth formation. *Id.* The manner in which the sonic energy propagates through earth formations may indicate the "location and/or producibility of hydrocarbon resources." *Id.*, at [0003]. For example, "[i]nhomgeneity can be caused, for example, by mud-shale interactions." *Id.*, at [0006]. In other words, *Bose* is limited to disclosing inhomogeneity of earth formations determined from the use of sonic waves. Accordingly, *Bose* fails to teach or suggest "wherein determining a degree of inhomogeneity along the cable route from the test values in the test value memory includes: retrieving test values corresponding to various test points along the cable route that are stored in memory; determining the variation in the two orthogonal components of the magnetic field from the test values; and scaling the variation to form the degree of inhomogeneity," as recited in claim 8 (emphasis added). Moreover, *Bose* also fails to provide any disclosure which renders the claimed combination obvious over *Lulham* and *Topp*.

As explained above, the elements required by claim 8 are neither taught nor suggested by the applied references. Nor has the Examiner explained how teachings of the references could be modified to achieve the claimed combination. Consequently, the Office Action has neither properly determined the scope and content of the prior art nor properly ascertained the differences between the prior art and the claimed invention. Accordingly, no reason has been clearly articulated as to why the claim would have been obvious to one of ordinary skill in the art

in view of the prior art. Therefore, a *prima facie* case of obviousness has not been established for claim 8.

For at least the above reasons, claim 8 is allowable. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 8 under 35 U.S.C. § 103(a).

**Conclusion**

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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